# Need for Interim Policy to Include Offshore Wind Turbine Testing on Novel Structures

Minerals Management Service

**OCS Policy Committee Meeting**

Herndon, VA

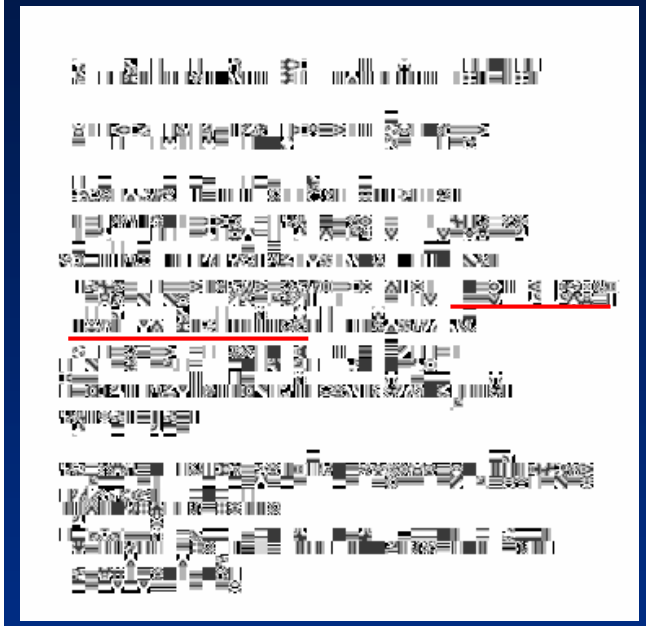
05 March 2008

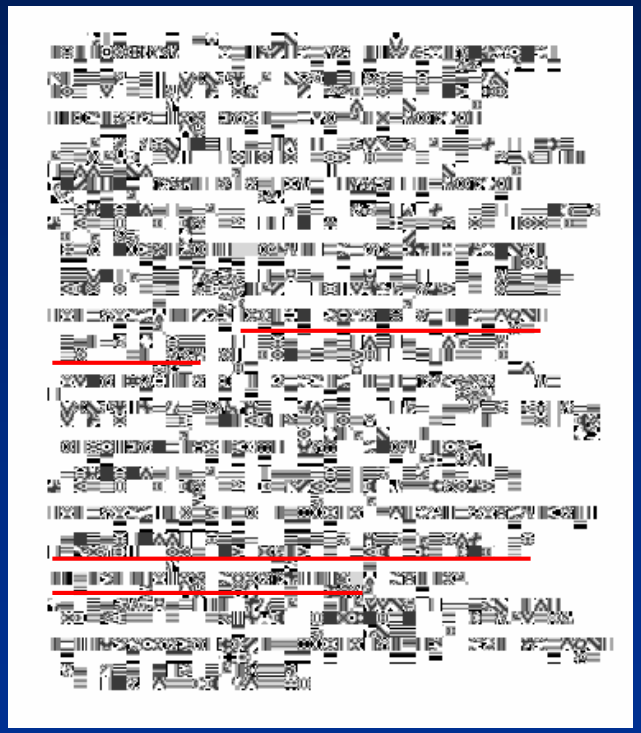
Public comment by

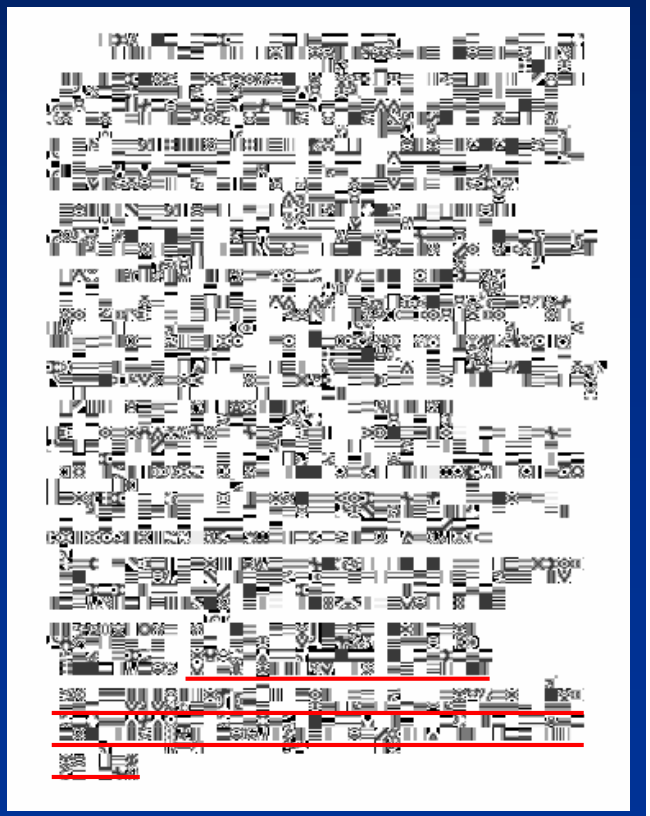
**George Hagerman**

Virginia Coastal Energy Research Consortium
Virginia Tech Advanced Research Institute

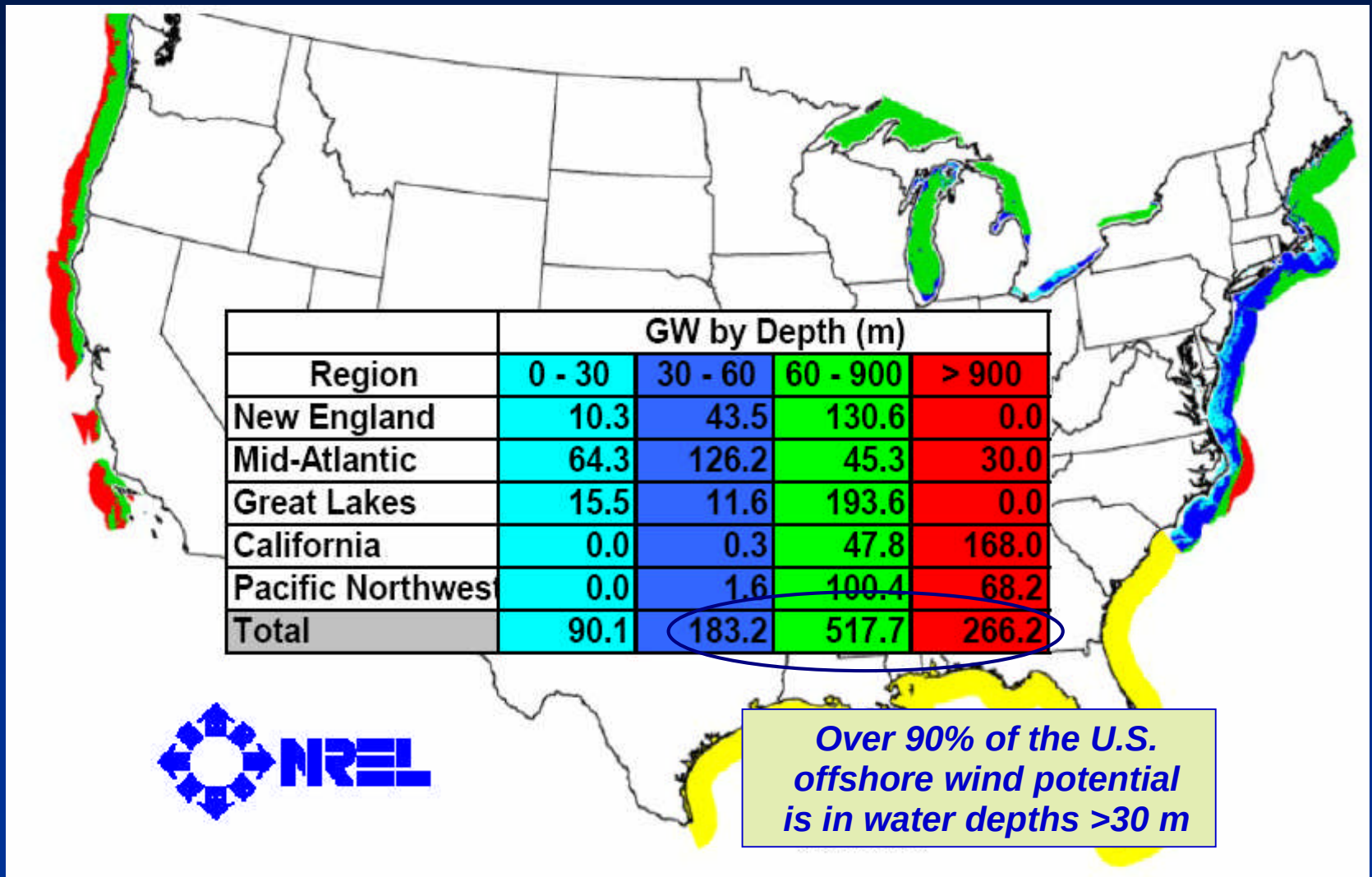
# Proposed Interim Leasing Policy for Alternative Energy Technology Testing Excludes Wind Turbines







# Monopile-Based Turbines can be Utilized for Only 8.5% of U.S. Offshore Wind Energy Potential

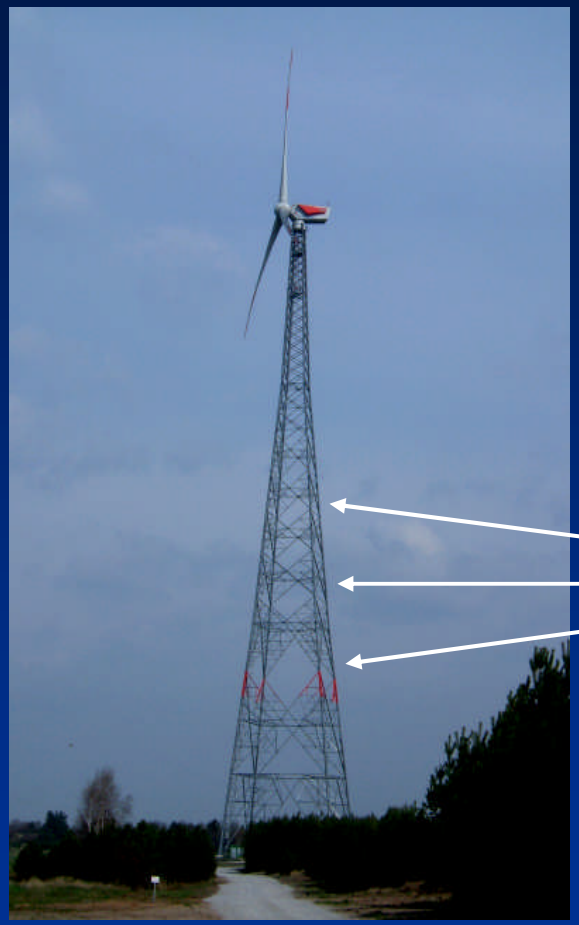


| | GW by Depth (m) | | | |
|---|---|---|---|---|
| Region | 0 - 30 | 30 - 60 | 60 - 900 | > 900 |
| New England | 10.3 | 43.5 | 130.6 | 0.0 |
| Mid-Atlantic | 64.3 | 126.2 | 45.3 | 30.0 |
| Great Lakes | 15.5 | 11.6 | 193.6 | 0.0 |
| California | 0.0 | 0.3 | 47.8 | 168.0 |
| Pacific Northwest | 0.0 | 1.6 | 100.4 | 68.2 |
| Total | 90.1 | 183.2 | 517.7 | 266.2 |

NREL

***Over 90% of the U.S. offshore wind potential is in water depths >30 m***

# Lattice Towers Cost Less than Monopile-Based Conventional Towers but May Attract Bird Roosting

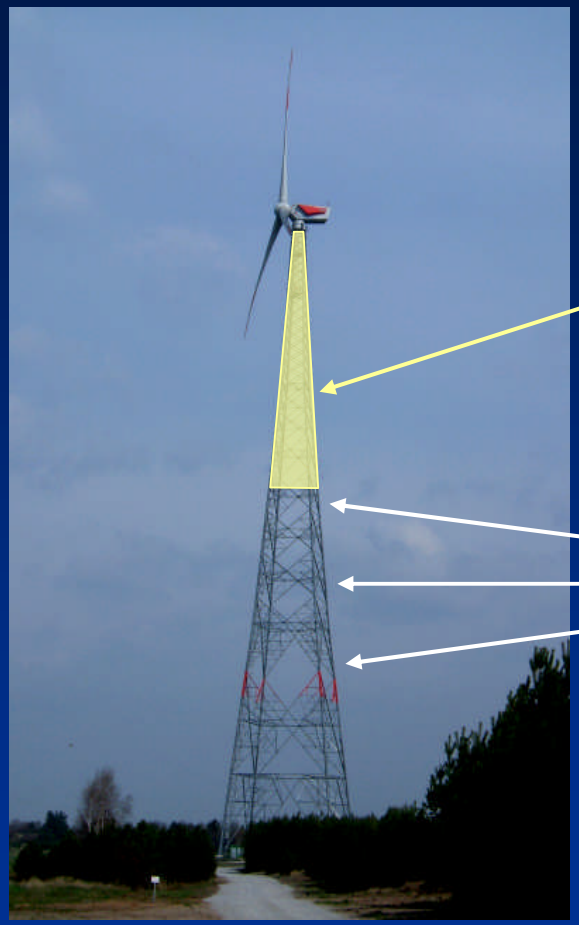


**MANY opportunities for roosting**

**FEW** (if any) **opportunities for roosting**

This 160 m lattice tower supports a 2.5-megawatt Fuhrländer turbine at Laasow, near Brandenburg, Germany. A similar tower designed to withstand offshore extreme storm conditions could be floated out, “upended” in 60 m water depth, and piled into place, providing 100 m hub height above sea level. Calculations suggest that offshore lattice tower would use only half the steel as monopile-based tower.

# Lattice Towers Cost Less than Monopile-Based Conventional Towers but May Attract Bird Roosting



**Thin, non-structural covering could prevent roosting in "bird danger zone" while retaining tower transparency to wave and current loads. This would need to be validated in sea trials.**

**MANY opportunities for roosting**

**FEW** (if any) **opportunities for roosting**

This 160 m lattice tower supports a 2.5-megawatt Fuhrländer turbine at Laasow, near Brandenburg, Germany. A similar tower designed to withstand offshore extreme storm conditions could be floated out, "upended" in 60 m water depth, and piled into place, providing 100 m hub height above sea level. Calculations suggest that offshore lattice tower would use only half the steel as monopile-based tower.

# Floating Wind Platforms Involve Less Costly Installation Vessels and Shorter Weather Windows

**DAY RATES**

| | |
|---|---|
| Jack up rig: | $85 - 90K |
| Tow vessel: | $12 - 15K |
| Anchor handling and tow vessel: | $17 - 20K |

www.natwindpower.co.uk/northhoyle

www.bluehgroup.com

Monopile-based conventional wind turbines require costly jack-up rigs to drive monopile and to install tower and turbine, with tow vessels needed to move jack-up. Floating wind turbines require much less expensive anchor handling and tow vessels, where the tower and turbine are pre-installed at pierside.

# Summary Points

- More than 90% of US offshore wind potential is in water depths > 30 m, beyond which monopile foundations become prohibitively costly
- Proposed MMS interim policy for short-term leases to test alternative energy technologies on the OCS specifically excludes wind turbines
- This exclusion would prevent the testing of novel foundation structures (such as lattice towers) and floating platforms, both of which promise substantial cost reductions for commercial offshore wind, if their performance and environmental effects can be monitored in ocean tests during the next five years

# Thank You!


Email: hagerman@vt.edu